Dual 741 General Purpose Operational Amplifiers

GENERAL DESCRIPTION

The RM1558 and RC1458 integrated circuits are high gain operational amplifiers internally compensated and constructed on a single silicon chip using the planar epitaxial process.

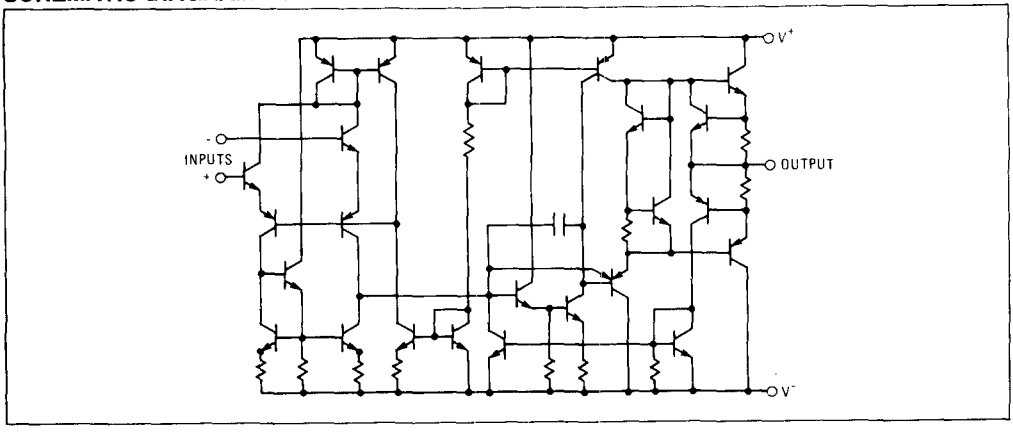
The military version, RM1558, operates over a temperature range from -55°C to +125°C. The commercial version, RC1458, operates from 0°C to +70°C.

Combining all of the features of the 741 with the close parameter matching and tracking of a dual device on a monolithic chip results in unique performance characteristics. It is especially well suited for applications where gain and phase matched channels are mandatory.

DESIGN FEATURES

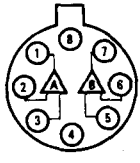
- Short-Circuit Protection
- No Frequency Compensation Required
- No Latch-Up
- Large Common-Mode and Differential Voltage Ranges
- Low Power Consumption
- Parameter Tracking Over Temperature Range
- Gain and Phase Match Between Amplifiers

SCHEMATIC DIAGRAM (1/2 Shown)



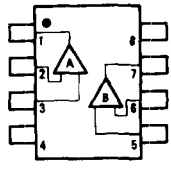
CONNECTION INFORMATION

TE (TO-99)
Metal Can Package
(Top View)



Order Part Nos.:
RM1558T, RC1458T

DE and NB Dual
In-line Package
(Top View)



Order Part No.:
RC1458NB, RC1458DE
RM1558DE

PIN	FUNCTION
1	OUTPUT (A)
2	-INPUT (A)
3	+INPUT (A)
4	V^-
5	+INPUT (B)
6	-INPUT (B)
7	OUTPUT (B)
8	V^+

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Dual 741 General Purpose Operational Amplifier

ABSOLUTE MAXIMUM RATINGS

Supply Voltage . . . . . RM1558: ±22 V
RC1458: ±18 V
Internal Power Dissipation (Note 1) . . . . . 500 mW
Differential Input Voltage . . . . . ±30 V
Input Voltage (Note 2) . . . . . ±15 V

Storage Temperature Range . . . . . −65°C to +150°C
Operating Temperature Range . RM1558: −55°C to +125°C
RC1458: 0°C to +70°C
Lead Temperature (Soldering, 60s) . . . . . 300°C
Output Short-Circuit Duration (Note 3) . . . . . Indefinite

ELECTRICAL CHARACTERISTICS (V_{CC} = ±15V, T_A = 25°C unless otherwise noted)

PARAMETER	CONDITIONS	RM1558			RC1458			UNITS
		MIN	TYP	MAX	MIN	TYP	MAX	
Input Offset Voltage	$R_S \leq 10\ k\Omega$		1.0	5.0		2.0	6.0	mV
Input Offset Current			30	200		30	200	nA
Input Bias Current			200	500		200	500	nA
Input Resistance		0.3	1.0		0.3	1.0		MΩ
Large-Signal Voltage Gain	$R_L \geq 2\ k\Omega$, $V_{out} = \pm 10V$	50,000	200,000		50,000	200,000		V/V
Output Voltage Swing	$R_L \geq 10\ k\Omega$	±12	±14		±12	±14		V
	$R_L \geq 2\ k\Omega$	±10	±13		±10	±13		V
Input Voltage Range		±12	±13		±12	±13		V
Common Mode Rejection Ratio	$R_S \leq 10\ k\Omega$	70	90		70	90		dB
Supply Voltage Rejection Ratio	$R_S \leq 10\ k\Omega$		30	150		30	150	μV/V
Power Consumption			100	150		100	170	mW
Transient Response (unity gain)	V_{in} = 20mV, R_L = 2 kΩ, $C_L \leq$ 100pF							
Risetime			0.3			0.3		μs
Overshoot			5.0			5.0		%
Slew Rate (unity gain)	$R_L \geq 2\ k\Omega$		0.5			0.5		V/μs
Channel Separation	f = 1 kHz		98			98		dB
The following specifications apply for $-55°C \leq T_A \leq +125°C$ for RM1558; $0°C \leq T_A \leq +70°C$ for RC1458.								
Input Offset Voltage	$R_L \leq 10\ k\Omega$			6.0			7.5	mV
Input Offset Current	+125°C, +70°C −55°C, 0°C			200 500			300 300	nA
Input Bias Current	+125°C, +70°C −55°C, +70°C			500 1500			800 800	nA
Large-Signal Voltage Gain	$R_L \geq 2\ k\Omega$, $V_{out} = \pm 10V$	25,000			25,000			
Output Voltage Swing	$R_L \geq 2\ k\Omega$	±12 ±10			±10			V
Power Consumption	V_S = ±15V							
	T_A = +125°C			150			150	mW
	T_A = −55°C			200			200	
Input Voltage Range		±12			±12			V

NOTES:

1. Rating applies for case temperatuers to +125°C; derate linearly at 6.5 mW/°C for ambient temperatures above +75°C for RM1558.
2. For supply voltages less than ±15V, the absolute maximum input voltage is equal to the supply voltage.
3. Short-circuit may be to ground or either supply. Rating applies to +125°C case temperature or +75°C ambient temperature for RC1458.